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Size of class in relation to school efficiency.—The rapid development of practically all types of public schools and the attending increase in cost have brought into the foreground of discussion the old question of the relation of the size of class to school efficiency. There is perhaps no administrative officer of experience who has not at some time or other faced this question. Its importance can be judged by the influence it has had in determining building standards and tax levies and in establishing the ratio of teachers to pupils in the different grades in many school systems. And yet the factual evidence for or against is so meager that a scientific man would not think of attempting an answer.

A recent publication¹ of the Bureau of Educational Research of the University of Illinois gives the results of an investigation designed to secure objective data bearing on the question. While the limitations of the investigation minimize the practical significance of the conclusions, the study points the way to the solution of this and other important administrative problems.

One of the chapters of the report is given to a survey of the size of classes in the elementary schools of Illinois in school systems employing six or more teachers and in the high schools of Chicago. This is followed by chapters in which are reported the results of controlled experiments with classes of varying size in five elementary schools of Chicago, in four Chicago high schools, and in the high schools in three Illinois cities.

The experiment in the elementary schools indicates that there is little difference in the achievement of pupils in the fundamental operations of arithmetic, silent reading, language, and spelling when taught in classes ranging in size from thirty-three to fifty-four pupils. In the high schools the evidence secured indicates that the achievement of students is relatively the same when taught in large or small classes, provided the teaching load of the teacher is not materially changed.

The director of the Bureau of Educational Research points out in a concluding chapter the reasons for the inconclusive results secured from the experiments and outlines the conditions essential for successful experimentation. This chapter should be especially helpful to those interested in securing more scientific answers to some of the debatable administrative problems that constantly confront administrative officers.

W. C. REAVIS

New Bedford school survey.—Upon authorization by the school committee of 1921, a study² of the school system of New Bedford was begun under the

¹ *Relation of Size of Class to School Efficiency.* University of Illinois Bulletin, Vol. XIX, No. 45. Urbana, Illinois: University of Illinois, 1922. Pp. 39. \$0.50.

² FRANK E. SPAULDING, *Principles, Policies, and Plans for the Improvement of the New Bedford Public Schools.* New Bedford, Massachusetts: School Committee, 1922. Pp. 182.

direction of Professor F. E. Spaulding, Head of the Department of Education, Yale University, and was completed in February, 1922. While the study is referred to as a "survey," Professor Spaulding explains that it differs radically in conduct, aim, and immediate results from the school survey that has come to be typical. (1) It was not undertaken "for the purpose . . . of adding another volume to the already extensive literature of school surveys," but "for the sole purpose of 'the improvement of the New Bedford school system'" (p. 11). (2) It avoids "the use of measurements and comparisons that are either designed to show or that actually do serve to show primarily the relative position in which any phase of the conditions or work in the New Bedford schools may be compared with those of other systems" (p. 12). (3) It was "carried on co-operatively and entirely by members of the personnel of the staff in charge of the schools; the only outsider . . . has been the director" (p. 13).

The program of improvements recommended to the school committee as a result of the survey includes: (1) revision of the rules and regulations governing the school system, (2) changes in the membership and terms of office of the school committee, (3) reorganization of the administrative and supervisory control of the system under seven departments, (4) consolidation of elementary-school principalships, (5) revision upward of salary schedules, (6) enlargement of the high-school curriculum to include certain vocational courses, (7) adoption of the junior high school organization, (8) introduction of numerous more favorable arrangements for meeting the needs of individual pupils, and (9) adoption of a comprehensive building-and-grounds program.

This summary of results impresses one as entirely rational but in no sense unique. Nor, in the main, do the aims of this survey give evidence of any very significant departure in the organization of such studies. The report is significant rather for the signs of a certain impatience with the elaborate technique of the modern scientific investigator. "No attempt has been made," the director of the survey remarks, "to make the studies exhaustive. Indeed, the assembling of vast and unnecessary arrays of figures and minor facts has been avoided" (p. 11). Nor was any serious attempt made to measure that for which the whole school system exists, namely, the product of instruction. True, the Lippincott-Chapman Classroom Products Survey Test was administered in Grades V to VIII inclusive, but the primary purpose was to suggest improvement in classification rather than in instruction. Moreover, the tests referred to are limited to reading and arithmetic.

Aside from the tendency to ignore certain promising possibilities in the field of educational measurement and statistical technique, the report contains much that will be regarded as the essence of administrative wisdom. Throughout there is ample evidence of the author's sound and comprehensive grasp of the problems in a large city school system. The portions of the report dealing with salary schedules and the age-grade distribution of pupils are especially

valuable and should be decidedly suggestive and helpful to every city superintendent.

FREDERICK S. BREED

A text on practical mathematics.—Teachers engaged in vocational or pre-vocational training will be interested in a book¹ in which it is attempted to present the general basic principles which the pupil must know whatever special vocation he may prepare for. The material is grouped into four divisions: arithmetic, mensurational geometry, trigonometry, and practical applications. The arithmetic section includes a review of the fundamental operations, percentage, discount, and ratio and proportion. The geometry develops formulas for the common plane figures and solids. In trigonometry right triangles are solved by means of the natural functions: tangent, sine, cosine, and cotangent. The applications are taken from a variety of shop problems. The treatment of the subject-matter is highly topical and exceedingly formal. However, to make the work appear less formal and less abstract, the authors have tried to create the atmosphere of the shop by selecting an abundance of shop problems and by inserting nearly three dozen blue-prints to which problems of the text are related. Thus the book reflects shop conditions.

A brief chapter on the use of the slide rule in multiplying, dividing, and extracting square roots adds to the practical appearance of the text.

E. R. BRESLICH

English in the junior high school.—One of the most important questions before educators today is that of the teaching of English in the seventh, eighth, and ninth grades. To all secondary-school teachers and to those immediately concerned with junior high school work come the questions: What principles of rhetoric, grammar, and mechanics need to be taught? How can they be presented so that the adolescent child's desire to *do* things may be satisfied, unchecked by overemphasis on drill?

Mr. Hatfield and Miss McGregor, out of their wide teaching experience, have given us an answer to these questions.² Service is, indeed, as the authors claim, the underlying principle of their book. The purpose of the book is to furnish a plan whereby the conditions of the English classroom may be analogous to the conditions of the child's extra-school life, in order that his interest may be aroused in discovering purposes and needs for himself.

The work is complete in one volume of three parts, each a natural outgrowth of the preceding part and each adapted in its degree of difficulty to the grade

¹ GEORGE WENTWORTH, DAVID EUGENE SMITH, and HERBERT DRUERY HARPER, *Fundamentals of Practical Mathematics*. Boston: Ginn & Co., 1922. Pp. vi+202. \$1.20.

² W. WILBUR HATFIELD and A. LAURA MCGREGOR, *English in Service*. Garden City, New York: Doubleday, Page & Co., 1922. Pp. xx+200+188+179+6. \$1.60.